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Focus Site Project Review

Future proofing a beef enterprise

Rhug Estate
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On behalf of

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1.0 Summary

1.1 Farm details

- 4,500 acre organic farm including 2,000 acres hill, 170 acres combinable crops, 120 acres wholecrop, 120 acres stubble turnips, rest grassland
- 600 finishing beef cattle purchased as stores
- 3,500 breeding ewes
- Also 20 breeding Bison and 25 Deer hinds

Business Objectives:

- Improve the profitability of the beef finishing system
- Increase efficiency, throughput and overall Gross Margin of the enterprise within the constraints of the current facilities and resources (spread overheads)
- Establish baseline benchmarks then set targets for the future that will be monitored using EID, technology etc
- To be able to make factual decisions for the enterprise based on a sound knowledge of his costs

1.2 Project key objectives

- Baseline benchmarking of the enterprise along the principles of “Measure to Manage”
- Utilise regular weighing to monitor performance, including the use of EID and management/monitoring software
- To record physical and financial data for all inputs so that true costs per kg can be accurately calculated
- To increase the use of ICT for improved business efficiency and to help the industry become more committed to professional development.

1.3 Project achievements

- Have installed weighing and EID equipment



Tru-test electronic weigh head



- Have commenced a regular weighing programme, data collection and initial data analysis
- Have become more selective when purchasing store cattle within the constraints of having to source organic cattle. This will become easier as more weight recording is done as farms whose cattle perform better will be easier to identify while farms with poorer performing cattle can either be dropped or can be spoken to in relation to genetics, management etc.
- This has included discussions with dairy farmers regarding dairy bred cross beef animals. This has the potential to help source more consistent cattle and secure a regular supply from all year-round calving herds. The difficulty may be that organic dairy farms may not be numerous and may already be producing their own beef as well.
- Have carried out initial benchmarking and set some Key Performance Indicators with the project contractors, SAC Consulting

- Forage analysis, feed budgeting and rationing has been carried out
- Regular updates on Farming Connect Website, blogs, videos etc
- Mentoring meeting has been held with Meilir Jones.

1.4 Project Details

In September 2017 Rhug was set up as a Focus Site for Farming Connect to look at “Future Proofing a beef unit- embracing technology to deal with an uncertain future”. SAC Consulting won the bid to provide consultancy and Meilir Jones, Gop farm was appointed as a Farming Connect mentor. His system, while not organic, is similar in that regular batches of cattle are finished, and he has been at the forefront of using technology, EID and regular weighing to improve efficiency and profitability.

Margins are tight in beef finishing and it is largely down to a numbers game where finishing large numbers helps to utilise overheads and resources better and increase the overall Gross Margin from the system. Improving performance will then also mean reduced days to slaughter and more cattle can then be brought into the system to further increase throughput and margins.

For example, increasing performance from 0.6kg/hd/day to 1kg/hd/day will reduce the days to slaughter by 150 days if growing cattle from 400kg at purchase to 600 kg at sale. This not only represents a huge saving in cost and increased margin per head but allows 2-3 more cattle to be put through the system and buildings. This spreads the cost of all the overheads such as machinery and labour etc.

The project work has been split into 3 parts

- **Baseline assessment of the enterprise, future KPI setting.**
A desktop exercise to determine the baseline physical and financial performance of the enterprise. In addition, the project specification suggests looking at marketing options (e.g. breed schemes in addition to selling 5hd/week through the farm shop) and carrying out a baseline carbon audit.
- **Nutritional planning**
Organic feeds are inherently more expensive so the importance of home-grown feed including forages, whole crop and cereals is emphasised. Analysis of all feeds and carrying out accurate rationing is critical. In addition, as store cattle are purchased on a year-round basis (with peaks in spring and autumn) and are sold throughout the year there is inevitably a period at grass. The implementation of a rotational grazing system for this 5 to 7-month period can help to put additional weight on the cattle at a lower cost. Additional growth at grass means less growth is required off expensive rations once the animals are housed.
- **Incorporating EID technology into the system**
This is key to the project. Unless growth rates are monitored then the system cannot be analysed, and rations or treatments modified to improve performance. In addition, knowing when performance has plateaued means they can be sold before they start incurring high daily costs.

Baseline assessment of the enterprise

The baseline data for benchmarking was collected and is summarised below

GROSS MARGIN.						
Fin1517				from	20-Jun-15	
OW&GFBeef[22]	over22months			to	25-Jul-16	
Number					536	
Financial results(£)					Total	per head
<u>Output</u>						
Sale/Transfer Out	Steer	536	610kg	£1,348.04	£722,550	
	Heifer	0	0kg	£0.00	£0	
	Bull	0	0kg	£0.00	£0	
Total Sales_Transfers Out		536	610kg	£1,348.04	£722,550	£1,348.04
Purchases/Transfer In	Steer	536	385kg	£914.79	£490,329	£914.79
	Heifer	0	0kg	£0.00	£0	
	Bull	0	0kg	£0.00	£0	
Total Purchases_Transfers In		536	385kg	£914.79	£490,329	£914.79
Valuation Change		0			£0	£0.00
Net Output					£232,221	£433.25
<u>Variable costs</u>						
Concentrate				428.0tonnes	£99,000	£184.70
OtherForage					£0	£0.00
OtherFeed					£0	£0.00
Bedding					£26,923	£50.23
Vet&Med					£1,696	£3.16
Marketing					£15,220	£28.40
SundryEnterpriseCosts					£7,821	£14.59
Variable Costs					£150,660	£281.08
GROSS MARGIN before forage					£81,561	£152.17
Forage Cost						
Silage				110.8ha	£6,739	£12.57
Hay				0.0ha	£0	£0.00
Roots				0.0ha	£0	£0.00
Grazing				189.2ha	£14,204	£26.50
Hill				0.0adj.ha		
ForageCost				300.0ha	£20,943	£39.07
GROSS MARGIN after forage					£60,618	£113.09
GROSS MARGIN per Hectare				1.79head/ha		£202.06
Allocated Fixed Costs						
Wages					£34,049	£63.52
Contract					£22,830	£42.59
Machinery					£17,511	£32.67
Property					£2,918	£5.44
General					£3,891	£7.26
Land					£0	£0.00
Depreciation					£34,049	£63.52
Finance					£11,674	£21.78
Total Fixed Costs					£126,923	£236.80
Net Margin					-£66,305	-£123.70

KEY PERFORMANCE FACTORS:-						YOUR FARM
Feeding Period						390days
Carcass weight kg						321kg
Purchase/Transfer In Weight						385kg
Sale/Transfer Out Weight						610kg
DLWG						0.58kg/day
Mortality						0%
Sale Price						221p/kg
Purchase Price						238p/kg
Concentrate Price						£231.31/tonne
Purchased Conc Kg						799kg
Home Grown Conc kg						0kg
N fertiliser use (kg/ha)						0kg/ha
Fixed Costs per kilo						105.2p/kg
Net Margin /kilo						-55.0p/kg

Comments on above performance data

- SAC Consulting compared the data with standard Quality Meat Scotland data for beef finishing – over 22 months of age- the closest comparison available. Gareth Jones also made the point that there is a lack of comparative benchmarking data available for organic systems. However, while this might be the case, benchmarking is also useful just to compare your own farm year on year so improvements can be made.
- **Headline figures**
 - Rhug GM/head after forage £113/hd
 - QMS average £165, top third £259
 - Rhug Net Margin/hd -£124/hd
 - QMS average -£80, top third -£22
 - Rhug LWG- 0.58kg/hd/day
 - QMS all- 1kg/hd/day

KPI setting

The main KPI that was identified was to increase daily liveweight gain and therefore reduce the number of days to slaughter.

Increasing LWG by 0.4 kg/hd to around 1 kg/hd/day will reduce feeding period by 165 days to 225 days, allowing more cattle to be put through the system to increase the enterprise GM if this is a feasible option given the overall feed supply or due to the availability of organic store cattle.

Nutritional planning

Forage analysis was carried out in 2018 for grass silage and wholecrop. Rations for growing and finishing stock have been devised. Due to the dry summer of 2018 forage stocks are tight so a feed budgeting exercise was also carried out.

Grazing management

To date there has been little progress made on implementing a rotational grazing system. Again, due to the dry summer of 2018 it was probably not the best year to contemplate this so it will be looked at again in 2019.

Cattle that are close to finishing (within 100 kg) may be best left indoors on a finishing ration while those that are over 200 kg from finishing can be grazed to grow on at a lower cost. Those that fall in between these extremes could be rotationally grazed with some cereals fed at grass (if required) as they approach finishing weight and condition.

Incorporating EID into the system

A system has been installed in the existing handling system. This included weigh cells under the existing Warwick crush, a Trutest weigh head and Border Software have provided the software programme. This is very similar to the system at Gop Farm which has been proven to work well over the last 4-5 years.

Options for improving efficiency and profitability

The HCC booklet "Beef Finishing Systems" is an up to date guide on improving beef finishing systems and can be found at <https://hccmpw.org.uk/en/industry-resources/beef-management>

Some suggestions would be

- Sourcing cattle from regular suppliers including dairy bred animals. This would lead to improvements in the consistency of cattle, previous management could be tailored to the system they would be coming onto at Rhug to avoid any inefficient checks in growth rate. A discussion with the store producers about suitable genetics could further increase consistency and performance and the health status of bought in cattle could then be under better control. Producers should be encouraged to supply a prestigious estate with a farm shop with cattle and a premium could be paid that would be covered by the improved performance that is likely. More integration should lead to better margins for all on the supply chain. Currently the store producers are likely to hang on to cattle too long to get a higher price per head for heavier cattle whereas they would be better off producing more cattle at a younger age and lighter weight.
- In conjunction with the farm vet and nutritionist it would be advantageous to have protocols for health treatments and transition diets on arrival. Both these issues should also include discussions with the store producer so that growth checks can be avoided due to sudden changes in management or diet.
- Implementing rotational grazing even at a basic level should see growth rates of up to 1kg/hd/day at grass. This has the additional advantage of this growth being cheaper than on a housed diet (or, indeed a poorer performing grazing system) and that there is then less weight to be put on for the final, housed phase.
- As is already carried out – forage analysis and accurate rationing makes the process more efficient and avoids wasting valuable feed. Any purchased feeds should also consider the Relative Feed Value against standard feeds for energy and protein. This is a better indicator of value for money when buying feeds than price per tonne alone.
- Regular weighing of cattle and analysis of performance will allow cattle to be monitored so they can be sold at the right weight and finish before they start incurring high daily feed costs. This is covered in the HCC booklet on pages 25-29. As cattle get heavier their maintenance requirements increase and growth is less

efficient. Finishing them at the optimum point when the value of weight gain exceeds the daily cost of the gain is a fine art but having the facilities and software makes it easier. This may occasionally lead to cattle that have plateaued, being sold slightly under-finished or even back to the store ring but the penalty may be lower than the extra feeding required to get them to the desired weight and fat class. Again, sourcing of more consistent cattle, at lighter weights/younger ages should make the transition from growing to finishing smoother so this becomes less of a problem in future.

1.5 Farmer commentary – Gareth Jones

I wanted to assess the performance of the beef enterprise to ensure it is in a positive financial position looking ahead to the future where support payments may possibly not be available. In addition, I wanted to utilise EID technology into the business to produce KPI's and aid in marketing planning and performance monitoring. The end goal is to be able to make factual decisions for the enterprise based on a sound knowledge of costs.

2 Business Review

2.1 Enterprise baseline data

See data in previous section above

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2.2 Potential impact of the project on the business

The enterprise supplies beef to two main outlets, its own farm shop at Rhug and also Dovecote Park. The price received from each is similar and the farm shop does not subsidise the enterprise in any way. Therefore, it is essential that the enterprise is profitable or it would be preferable to find alternative sources of beef and release the resources and capital tied up in the beef enterprise.

Currently (or at the start) each animal is costing the business £124 to keep so this is obviously unsustainable. Several areas have been identified that can be worked on to improve both physical and financial performance. Benchmarking should continue on an annual basis so that progress can be tracked, and further adjustments made.

3 Project Review

3.1 SWOT analysis

STRENGTHS	<ul style="list-style-type: none"> • Reputation of the estate and own farm shop as an outlet • Will to improve performance and make the changes necessary • Good facilities and resources available
WEAKNESSES	<ul style="list-style-type: none"> • Source of organic beef stores – both in terms of availability of numbers and that they tend to be heavy and too old at purchase – much of the efficiency has already gone from the animal

	<ul style="list-style-type: none"> • Lack of performance data and cost control measures in the past
OPPORTUNITIES	<ul style="list-style-type: none"> • More integration with cattle breeders including dairy bred and suckler bred stores • Getting cattle younger and lighter and having inherently more efficient cattle to work with • Continue monitoring performance, cost control, rationing and health planning. Attention to detail in all areas. • Increase LWG, reduce days on the farm and increase throughput from the same overheads.
THREATS	<ul style="list-style-type: none"> • Brexit and uncertainty for livestock production • Extreme weather events affecting forage production • Uncertainty of supply of organic store cattle

3.2 Benefits for other Welsh sheep/beef businesses

In conjunction with what has happened at Gop Farm there are opportunities for excellent Knowledge Exchange activities based on the success and progress made during this project.

In addition, there is also an opportunity to set up a more integrated supply chain operation for organic Welsh beef production.

There is also the over-riding need to improve the use of technology in livestock production. The technology already exists but it will require a joined up approach from the industry to achieve the benefits that are possible along the supply chain.

3.3 Alignment with sheep/beef sectors strategic goals

This work contributes to the Welsh Red Meat Industry's Strategic Action Plan 2015- 2020; specifically, in relation to-

- ***The Strategic Priority “Improve production efficiency (thereby increasing quality supply) whilst maintaining the environment and landscape of Wales”***
- ***Strategic Objective 2- “Increase the contribution of the Welsh red meat sector to Welsh Agricultural Output”- specifically the following Actions***
 - ***“Develop new business-focused programmes to improve the management, efficiency and profitability of Welsh red meat businesses”***
 - ***“Establish mechanisms that will maximise outputs from grass-based systems and reduce reliance on bought in (imported) feed”.***
 - ***Inform/educate the industry about cost saving and conservation, energy and water efficiency, ways to reduce waste and ways to improve knowledge, openness and transparency***

- ***Deliver new technology transfer activities that can demonstrate practical industry solutions to encourage uptake of new technology***
- ***Deliver knowledge transfer activities that promote innovation and encourage the uptake of best practice***

4 Impact on the industry

4.1 Impact on individual business

The current (baseline) financial performance is not sustainable in the long run so any improvements will be welcomed. In time there is potential to improve performance per head significantly as well as increase throughput so the overall Gross Margin from the enterprise will be vastly improved without an increase in overheads.

4.2 Impact on wider industry

This project has value to all beef finishing enterprises in Wales, organic or conventional. The basic principles of growth, efficiency, nutrition, health, performance monitoring and cost control are valid across all systems.

4.3 Impact on Welsh Government's cross cutting and priority themes

Climate change

The UK government is legally required to reduce greenhouse gas emissions across agriculture by 80% of the 1990 levels, by 2050 (there is also an interim reduction target of 11% by 2020). Agriculture has to play a key role in achieving these reductions. Improving cattle performance and making better use of feed resources etc will have a positive impact on the carbon footprint of the enterprise.

Animal Health and Welfare (AHW)

In conjunction with working with vets and nutritionists the project will lead to improvements in stock Health & Welfare.

Future Generations

The financial benefits outlined earlier make this type of work beneficial and more attractive to younger farmers and new entrants.

The Natural Environment

This system could allow higher production from the best land on a farm while more marginal areas can be used for environmental measures.

Tackling Poverty

By farms being more profitable, typically the additional monies are then reinvested back into the business. This results in more money being spent in the locality with suppliers to the business, resulting in continuation of job retention in local communities.

5 Project Team

Gareth Jones - Rhug Estate Manager

Elwyn Parry – Rhug Estate Stockman

Meilir Jones, Gop Farm- Farming Connect mentor

Marianne Burrell - Rhug Estate admin/records

Gwyn Jones - Wern Vets, Ruthin

Emyr Owen & Gwawr Hughes - Farming Connect/Menter a Busnes

Gavin Hill - SAC Consulting (industry specialist)